INTRODUCTION

Thoracic endovascular aortic repair (TEVAR) has been the most important recent advance in the care of patients with thoracic aortic disease. In appropriate patients, TEVAR has reduced recovery times, major morbidity, and disease-related mortality. Although it has transformed the care of patients with descending thoracic aortic aneurysm, penetrating ulcers, complicated distal aortic dissection, and traumatic aortic injury, it is still a young therapy and there is much to be learned about patient selection, contemporary imaging, device design, procedural techniques, and follow-up. Many specialties participate in the care of patients having TEVAR and keeping up with new developments is essential.

The Society for Vascular Surgery® (SVS) sponsored a series of continuing medical education courses, with the syllabus printed as the very first Supplement A in the *Journal of Vascular Surgery* in 2006. The Midwestern Vascular Surgical Society is also committed to the continued education of physicians, and has commissioned this syllabus in conjunction with sponsoring advanced TEVAR courses in the Midwest. Adult learning is at the core of medical professionalism, and the spirit of these courses is to provide a relaxed, small-group, peer-to-peer environment in economical and accessible regional venues.

We are grateful to the many authors who gave their time and effort to write these contributions. They are rewarded by knowing that they have assisted safer performance of TEVAR in clinical practice. It should be acknowledged that these courses and this Supplement are complementary to required Food and Drug Administration-approved, manufacturer-sponsored, device certification training, and other excellent educational pathways.

This syllabus builds on the knowledge that was available when TEVAR became commercially available in 2005 when the first Supplement was written. Clinical data have blossomed with reports from many multicenter trials, novel devices, larger registries with improved statistical power, long-term follow-up, expert consensus statements, and a randomized trial. Several procedural techniques, new proven devices, and contemporary imaging methods are reviewed; however, this is not a definitive summary collection. Although experienced authors from multiple involved specialties have been commissioned, there remains substantial diversity in techniques and clinical algorithms. Investigational devices hold hope for broader anatomic applicability and reduced device-related complications, but history reminds us that newer is not always better. Clearly, more research and updated information will be forthcoming.

TEVAR devices and aneurysm data. First, contemporary outcomes in open repair of the thoracic and thoracoabdominal aorta are discussed by Drs CW Acher and Mimi Wynn from the University of Wisconsin. They establish that complications are substantially reduced at centers of excellence with modern techniques and teams. Next, Dr Sean Lyden from the Cleveland Clinic details and contrasts the commercially available devices and deployment systems. His colleague, Dr Roy Greenberg, then describes many of the investigational devices that are undergoing evaluation. These two articles illustrate the rapid and dynamic progress being made in the TEVAR field. The results of pivotal regulatory clinical trials in the United States are reviewed and compared by Drs Manuel Garcia-Toca and Mark Eskandari from Northwestern.

Challenging pathologies. The second group of articles describes the position of TEVAR for aortic diseases other than elective aneurysm repair. Drs Paul DiMusto, Dave Williams, Himanshu Patel, Santi Trimarchi, Jon Eliason, and Gib Upchurch comprehensively review endovascular management of aortic dissection, including techniques of fenestration and stenting as well as stent grafting. They present in an organized manner the substantial amount of data that have emerged about the care of this difficult problem. Next, Dr Himanshu Patel and his colleagues at the University of Michigan address the vexing problems of mycotic aneurysms and aortic fistulas and the potential roles of TEVAR. Dr Girma Tefera from the University of Wisconsin discusses the utility and techniques of TEVAR for patients with traumatic aortic injury. In this application, TEVAR has become the dominant treatment option.

Skills, imaging, and techniques. Learning new procedures remains one of the most interesting aspects in modern practice of medicine, and this series of articles details technical considerations common to TEVAR for all indications. Dr Jean Starr from Ohio State University starts with gathering together skill sets, supplies, and teams. These are essential aspects for a successful TEVAR program. In a well-illustrated article on intraprocedural imaging, Dr Matt Eagleton from the Cleveland Clinic discusses new imaging techniques and the practical applications for TEVAR. It has been said by a pioneer of endovascular medicine, Dr Charlie Strother, "If I can see it, I can treat it." Although heavy in jargon, this article is mandatory reading for those who want to be up-to-date on these critical technologic advances. The next article focuses on new concepts for provision of access and is written by Dr Brian Peterson from Saint Louis University. Large sheath insertion during TEVAR and the risk of iliofemoral artery rupture remains a daunting concern.

Competition of interest: Dr Matsumura has research grants through University of Wisconsin from Abbott, Gore, Covidien, and Cook.

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Four articles address TEVAR involving near the arch and visceral vessels. Drs Jon Matsumura and Addi Rizvi cover the analysis of data that led to the SVS Practice Guidelines about left subclavian artery revascularization. Then, Drs Raghuveer Vallabhaneni and Luis Sanchez from Washington University describe open techniques for arch vessel reconstruction. This is nicely complemented by the following article on endovascular techniques for arch vessel preservation by Drs Matt Longo and Iraklis Pipinos at the University of Nebraska. Dr Sunita Srivastava from the Cleveland Clinic has written an outstanding review on visceral reconstruction techniques. These three articles catalogue the innovation captured in these hybrid TEVAR procedures. The last article in this group, by Drs Addi Rizvi and Tim Sullivan from Minneapolis Heart Institute, clearly presents the many important aspects of spinal cord protection during TEVAR.

After the procedure. Endoleak management and postoperative surveillance are covered by Dr Joseph Ricotta II, in an article that details data found in different trials and contrasts endoleak distribution with TEVAR and EVAR. Other late complications are described by Drs Pegge Halandras and Ross Milner from Loyola University. In the last article, Dr Gary Seabrook from the Medical College of Wisconsin provides a demonstration of accurate coding of TEVAR procedures.

The Midwestern Vascular Surgical Society and the many talented authors appreciate the privilege of contributing to this Supplement and sincerely hope that readers find the content useful in further developing TEVAR programs and providing contemporary care for patients suffering from thoracic aortic diseases.

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